

Appl. No. 10/015,858
Amdt. dated October 21, 2003
Reply to Office Action of July 22, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method of making a tissue product comprising:
 - a) depositing an aqueous suspension of papermaking fibers onto a forming fabric thereby forming a wet tissue web;
 - b) transferring the wet tissue web to a woven sculpted fabric having a tissue contacting surface including at least a first group of strands and a second group of strands wherein the first group of strands extend in a first direction and the second group of strands extend in a second direction and the first group of strands are adapted to produce elevated floats and depressed sinkers, defining a three-dimensional fabric surface comprising:
 - i) a first background region having a set of substantially parallel first elevated floats separated by a set of substantially parallel first depressed sinkers, comprising first depressed sinkers positioned between adjacent first elevated floats and comprising first elevated floats positioned between adjacent first depressed sinkers;
 - ii) a second background region having a set of substantially parallel second elevated floats separated by a set of substantially parallel second depressed sinkers, comprising second depressed sinkers positioned between adjacent second elevated floats and comprising second elevated floats positioned between adjacent second depressed sinkers; and,
 - iii) a transition region positioned between the first and second background regions, wherein the first elevated floats of the first background region descend to become the second depressed sinkers of the second background region and the second elevated floats of the second background region descend to become the first depressed sinkers of the first background region; and,
 - c) drying the wet tissue web.

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2. (Original) The method of Claim 1, wherein the wet tissue web has a consistency of at least about 20 percent when the wet tissue web is transferred to the woven sculpted fabric.
3. (Original) The method of Claim 1, wherein drying the wet tissue web comprises noncompressive drying.
4. (Original) The method of Claim 3, wherein the noncompressive drying the wet tissue web comprises through air drying on a throughdryng fabric thereby forming a dried tissue web.
5. (Original) The method of Claim 4, wherein the speed of the throughdryng fabric is from about 10 to about 80 percent slower than the speed of the forming fabric.
6. (Original) The method of Claim 4, further comprising transferring the wet tissue web from the forming fabric to a transfer fabric before transferring the wet tissue web to the throughdryng fabric wherein the speed of the transfer fabric is from about 10 to about 80 percent slower than the speed of the forming fabric.
7. (Original) The method of Claim 6, wherein the speed of the transfer fabric is substantially the same as the speed of the woven sculpted fabric.
8. (Original) The method of Claim 1, wherein at least one of the first elevated floats overlap at least one of the second elevated floats within the transition region of the woven sculpted fabric.
9. (Original) The method of Claim 1, wherein the direction of the first group of strands of the woven sculpted fabric is in the machine direction.
10. (Original) The method of Claim 1, wherein the direction of the first group of strands of the woven sculpted fabric is at an acute angle to the machine direction.

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11. (Original) The method of Claim 1, wherein the direction of the first group of strands of the woven sculpted fabric is substantially orthogonal to the second direction of the second group of strands of the woven sculpted fabric.

12. (Original) The method of Claim 1, wherein at least one of the first depressed sinkers of the woven sculpted fabric is a multi-strand first depressed沉器.

13. (Original) The method of Claim 1, wherein at least one of the second depressed sinkers of the woven sculpted fabric is a multi-strand second depressed沉器.

14. (Original) The method of Claim 1, wherein at least one of the first elevated floats of the woven sculpted fabric is a multi-strand first elevated float.

15. (Original) The method of Claim 1, wherein at least one of the second elevated floats of the woven sculpted fabric is a multi-strand second elevated float.

16. (Original) The method of Claim 1, wherein the transition region has greater surface depth than the first background region.

17. (Original) The method of Claim 1, wherein the transition region has greater surface depth than the second background region.

18. (Original) The method of Claim 1, wherein the transition region is filled.

19. (Original) The method of Claim 1, wherein the transition region has substantially the same surface depth of the first background region.

20. (Original) The method of Claim 1, wherein the transition region has substantially the same surface depth of the second background region.

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21. (Original) The method of Claim 1, wherein the transition region is filled with a polymeric resin.

22. (Original) The method of Claim 1, wherein the maximum plane difference of the first elevated floats is at least about 0.12 mm.

23. (Original) The method of Claim 1, wherein each of the first elevated floats has a width, and the maximum plane difference of the first elevated floats is at least about 30% of the width of one of the first elevated floats.

24. (Original) The method of Claim 1, wherein the maximum plane difference of the second elevated floats is at least about 0.12 mm.

25. (Original) The method of Claim 1, wherein each of the second elevated floats has a width, and the maximum plane difference of the second elevated floats is at least about 30% of the width of one of the second elevated floats.

26. (Original) The method of Claim 1, wherein the first background region has a first background texture and the second background region has a second background texture.

27. (Original) The method of Claim 26, wherein the first background texture of the first background region is substantially the same as the second background texture of the second background region.

28. (Original) The method of Claim 26, wherein the first background texture of the first background region is different than the second background texture of the second background region.

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29. (Original) The method of Claim 1, wherein each first elevated float has a first beginning point and a first ending point, each second elevated float has a second beginning point and a second ending point wherein the first ending point of at least one of the first elevated float is separated in the transition region by a gap having a width ranging from about 10 mm to about negative 10 mm from the second ending point of at least one of the nearest second elevated floats.

30. (Original) The method of Claim 29, wherein the gap has a width ranging from about 4 mm to about negative 4 mm.

31. (Original) The method of Claim 1, wherein the maximum distance between adjacent first elevated floats is at least about 0.3 mm.

32. (Original) The method of Claim 31, wherein the maximum distance between adjacent first elevated floats is greater than the width of one of the adjacent first elevated floats.

33. (Original) The method of Claim 1, wherein the maximum distance between adjacent second elevated floats is at least about 0.3 mm.

34. (Original) The method of Claim 33, wherein the maximum distance between adjacent second elevated floats is greater than the width of one of the adjacent second elevated floats.

35. (Original) The method of Claim 1, wherein the wet tissue web is macroscopically rearranged to conform to the tissue contacting surface of the woven sculpted fabric.

36. (Original) The method of Claim 1, wherein the woven sculpted fabric is a forming wire.

37. (Original) The method of Claim 3, wherein the wet tissue web is at least partially throughdried on the woven sculpted fabric.

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38. (Original) The method of Claim 1, wherein the woven sculpted fabric is a transfer fabric.

39. (Original) A tissue product made by the method of Claim 1.

40. (Original) The tissue product of Claim 39, wherein the tissue product has a density that is substantially uniform.

41. (Original) The tissue product of Claim 39, wherein the tissue product has a machine direction stretch of greater than about 10 percent, further comprising a softness agent disposed on a surface of the tissue product.

42. (Original) The method of Claim 1, wherein the tissue contacting surface of the woven sculpted fabric is non-macroscopically monoplanar.

43. (Original) The method of Claim 4, wherein the dried tissue web is not creped.

44. (Original) The method of Claim 4, wherein the dried tissue web is transferred to a Yankee dryer.

45. (Original) The method of Claim 44, wherein the dried tissue web is removed from the Yankee dryer without creping.

46. (Original) The method of Claim 44, wherein the dried tissue web is removed from the Yankee dryer with creping.

47. (Original) The method of Claim 4, further comprising dewatering the wet tissue web by at least one of displacement dewatering, capillary dewatering, and application of an air press.

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48. (Original) The method of Claim 4, further comprising dewatering the wet tissue web by at least one of impulse drying, radiofrequency drying, long nip pressing, wet pressing, steam drying, high intensity nip drying, and infrared drying.

49. (Original) The method of Claim 1, wherein the wet tissue web is treated with a chemical strength agent and creped two or more times.

50. (Original) A method of making a tissue product comprising:

- a) depositing an aqueous suspension of papermaking fibers onto a forming fabric thereby forming a wet tissue web;
- b) transferring the wet tissue web to a woven sculpted fabric having a tissue contacting surface including at least a first group of strands and a second group of strands wherein the first group of strands extend in a first direction and the second group of strands extend in a second direction and the first group of strands are adapted to produce elevated floats and depressed sinkers, defining a three-dimensional fabric surface comprising:
 - i) a first background region having a set of substantially parallel first elevated floats separated by a set of substantially parallel first depressed sinkers, comprising first depressed sinkers positioned between adjacent first elevated floats and comprising first elevated floats positioned between adjacent first depressed sinkers;
 - ii) a second background region having a set of substantially parallel second elevated floats separated by a set of substantially parallel second depressed sinkers, comprising second depressed sinkers positioned between adjacent second elevated floats and comprising second elevated floats positioned between adjacent second depressed sinkers; and,

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- iii) a transition region positioned between the first and second background regions, wherein the first elevated floats of the first background region become the second elevated floats of the second background region and the first depressed sinkers of the first background region become the second depressed sinkers of the second background region; and,
- c) drying the wet tissue web.

51. (Original) The method of Claim 50, wherein the wet tissue web has a consistency of at least about 20 percent when the wet tissue web is transferred to the woven sculpted fabric.

52. (Original) The method of Claim 50, wherein drying the wet tissue web comprises noncompressive drying.

53. (Original) The method of Claim 52, wherein the noncompressive drying the wet tissue web comprises through air drying on a throughdryng fabric thereby forming a dried tissue web.

54. (Original) The method of Claim 53, wherein the speed of the throughdryng fabric is from about 10 to about 80 percent slower than the speed of the forming fabric.

55. (Original) The method of Claim 53, further comprising transferring the wet tissue web from the forming fabric to a transfer fabric before transferring the wet tissue web to the throughdryng fabric wherein the speed of the transfer fabric is from about 10 to about 80 percent slower than the speed of the forming fabric.

56. (Original) The method of Claim 55, wherein the speed of the transfer fabric is substantially the same as the speed of the woven sculpted fabric.

57. (Original) The method of Claim 50, wherein at least one of the first elevated floats overlap at least one of the second elevated floats within the transition region.

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58. (Original) The method of Claim 50, wherein the direction of the first group of strands is in the machine direction.

59. (Original) The method of Claim 50, wherein the direction of the first group of strands is at an acute angle to the machine direction.

60. (Original) The method of Claim 50, wherein the direction of the first group of strands is substantially orthogonal to the second direction of the second group of strands.

61. (Original) The method of Claim 50, wherein at least one of the first depressed sinkers is a multi-strand first depressed sinker.

62. (Original) The method of Claim 50, wherein at least one of the second depressed sinkers is a multi-strand second depressed sinker.

63. (Original) The method of Claim 50, wherein at least one of the first elevated floats is a multi-strand first elevated float.

64. (Original) The method of Claim 50, wherein at least one of the second elevated floats is a multi-strand second elevated float.

65. (Original) The method of Claim 50, wherein the transition region has greater surface depth than the first background region.

66. (Original) The method of Claim 50, wherein the transition region has greater surface depth than the second background region.

67. (Original) The method of Claim 50, wherein the transition region is filled.

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68. (Original) The method of Claim 50, wherein the transition region has substantially the same surface depth of the first background region.

69. (Original) The method of Claim 50, wherein the transition region has substantially the same surface depth of the second background region.

70. (Original) The method of Claim 50, wherein the transition region is filled with a polymeric resin.

71. (Original) The method of Claim 50, wherein the maximum plane difference of the first elevated floats is at least about 0.12 mm.

72. (Original) The method of Claim 50, wherein each of the first elevated floats has a width, and the maximum plane difference of the first elevated floats is at least about 30% of the width of one of the first elevated floats.

73. (Original) The method of Claim 50, wherein the maximum plane difference of the second elevated floats is at least about 0.12 mm.

74. (Original) The method of Claim 50, wherein each of the second elevated floats has a width, and the maximum plane difference of the second elevated floats is at least about 30% of the width of one of the second elevated floats.

75. (Original) The method of Claim 50, wherein the first background region has a first background texture and the second background region has a second background texture.

76. (Original) The method of Claim 75, wherein the first background texture of the first background region is substantially the same as the second background texture of the second background region.

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77. (Original) The method of Claim 75, wherein the first background texture of the first background region is different than the second background texture of the second background region.

78. (Original) The method of Claim 50, wherein each first elevated float has a first beginning point and a first ending point, each second elevated float has a second beginning point and a second ending point wherein the first ending point of at least one of the first elevated float is separated in the transition region by a gap having a width ranging from about 10 mm to about 0 mm from the second ending point of at least one of the nearest second elevated floats.

79. (Original) The method of Claim 78, wherein the gap has a width ranging from about 4 mm to about 0 mm.

80. (Original) The method of Claim 50, wherein the maximum distance between adjacent first elevated floats is at least about 0.3 mm.

81. (Original) The method of Claim 50, wherein the maximum distance between adjacent first elevated floats is greater than the width of one of the adjacent first elevated floats.

82. (Original) The method of Claim 50, wherein the maximum distance between adjacent second elevated floats is at least about 0.3 mm.

83. (Original) The method of Claim 82, wherein the maximum distance between adjacent second elevated floats is greater than the width of one of the adjacent second elevated floats.

84. (Original) The method of Claim 50, wherein the wet tissue web is macroscopically rearranged to conform to the tissue contacting surface of the woven sculpted fabric.

85. (Original) The method of Claim 50, wherein the woven sculpted fabric is a forming wire.

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86. (Original) The method of Claim 50, wherein the woven sculpted fabric is a through air drying fabric.

87. (Original) The method of Claim 50, wherein the woven sculpted fabric is a transfer fabric.

88. (Original) A tissue product made by the method of Claim 50.

89. (Original) The tissue product of Claim 88, wherein the tissue product has a density that is substantially uniform.

90. (Original) The tissue product of Claim 88, wherein the tissue product has a machine direction stretch of greater than about 10 percent.

91. (Currently Amended) The woven sculpted fabric method of Claim 50, wherein the tissue contacting surface of the woven sculpted fabric is non-macroscopically monoplanar.

92. (Original) The method of Claim 53, wherein the dried tissue web is not creped.

93. (Original) The method of Claim 53, wherein the dried tissue web is transferred to a Yankee dryer.

94. (Original) The method of Claim 93, wherein the dried tissue web is removed from the Yankee dryer without creping.

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95. (Original) The method of Claim 93, wherein the dried tissue web is removed from the Yankee dryer with creping.

96. (Original) The method of Claim 53, further comprising dewatering the wet tissue web by at least one of displacement dewatering, capillary dewatering, and application of an air press.

97. (Original) The method of Claim 53, further comprising dewatering the wet tissue web by at least one of impulse drying, radiofrequency drying, long nip pressing, wet pressing, steam drying, high intensity nip drying, and infrared drying.

98. (Original) The method of Claim 50, wherein the wet tissue web is treated with a chemical strength agent and creped two or more times.

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Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 8, 10, 11, 25, 27, 29 and 30. These sheets, which include Figs. 8, 10, 11, 25, 27, 29 and 30, replace the original sheets including Figs. 8, 10, 11, 25, 27, 29 and 30. See the following Remarks for explanation of changes.

Attachment: Replacement Sheets For Figs. 8, 10, 11, 25, 27, 29 and 30